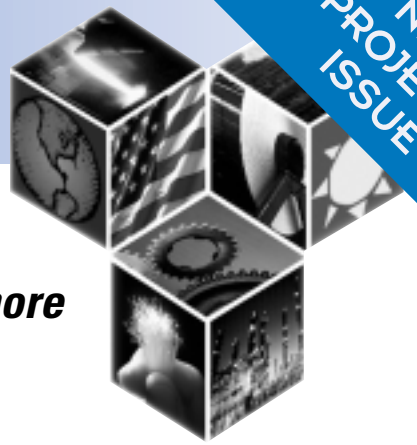
THE OIT TIMES

"Turning Industry Visions into Reality"

Vol. 3, No. 1

WINTER 2000

NEW PROJECTS ISSUE

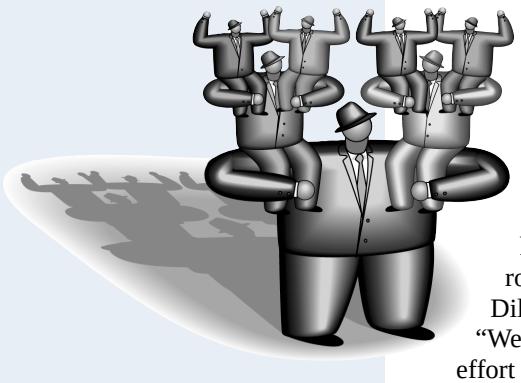


OIT and industry partners launch more than 130 new RD&D projects in '99

Through OIT's customer-driven "Industries of the Future" strategy, industry representatives work together to identify their priority pre-competitive technology investments—technologies that will best help their industries save energy, boost productivity and reduce waste. In 1999, with OIT's help, over 130 of these technologies came on a faster track to development and commercial deployment. This special "new projects issue" of *The OIT Times* lists our new start-up projects during 1999.

"Many valuable technologies are too costly for a single organization to develop alone," explained Denise Swink, DOE's Deputy Assistant Secretary for Industrial Technologies. "Our role is to get the competing players to identify the technologies that will make their industries more competitive and energy-efficient. We support R&D projects that can best help meet these goals by sharing the funding of those efforts. As valuable as this work is, much of it would probably not move forward without this kind of support."

The aluminum industry, for example, is excited about its newly revitalized focus on developing inert anodes, a roadmap technology that could revolutionize its energy usage and emissions profiles. And, indeed, OIT's **Aluminum Team** "Class of '99" includes a project investigating an innovative anode technology. "Non-consumable anodes were given very high priority by the industry in our roadmapping efforts," said Sara Dillich, OIT's Aluminum Team Leader. "We're pleased to be co-funding an R&D effort that is taking a promising new approach to the challenge."



All of OIT's Industry Teams solicit R&D proposals that address priority needs identified in their industry's roadmaps. Harvey Wong, OIT's **Metalcasting Team** Leader, refers to these consensus documents as a "blueprint." "Our roadmap, created in tandem by all sectors of the highly diverse metalcasting industry, guided us throughout the process—from the solicitation, to the projects suggested by industry, to the final selection," Wong said. "We were very pleased with the excellent proposals we received, and with the quality of projects selected. We are cost-sharing 17 of them, and some of the projects have as many as 30 partners. So I think our work is gaining very broad interest and support."

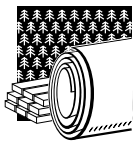
Check out the expanded *OIT Times-on-the-Web* at www.oit.doe.gov/oittimes

To maximize the leverage of its efforts, OIT engages as many partners from as many levels as possible. In one new approach, OIT's **"BestPractices"** is helping plants benefit from new technologies and well-proven cost saving opportunities in motor, steam and other plant-wide systems. "We believe that if you take a plant-wide systems approach—looking at all the opportunities in total—you can often reduce energy use by up to 30% in 3 to 10 years," explained OIT BestPractices Lead Paul Scheihing. "Through BestPractices, we can share a wide range of near - and long-term technology solutions for specific processes and plant-wide operations."

In 1999, BestPractices started its first cost-shared, plant-wide energy efficiency assessments by partnering with seven plants in four industries. BestPractices is now looking for new partners to work with in 2000. **A complete schedule of current and planned OIT solicitations appears on page 7.**

INSIDE

Forest Products



Title: Accelerated Stem Growth Rates and Improved Fiber Properties of Loblolly Pine
Partners: Institute for Paper Science and Technology (IPST)

Title: Quality Trait Loci and Candidate Genes for Growth Traits in *Pinus Taeda L.*
Partners: Texas A&M Univ., The Timber Co., Union Camp Corp., International Paper Co., Weyerhaeuser Co., Perkin-Elmer AgGen, Western Gulf Forest Tree Improvement Program, Texas Agricultural Experiment Station

Title: Use of Residual Solids from Pulp and Paper Mills for Enhancing Strength and Durability of Ready-Mixed Concrete
Partners: Univ. of Wisconsin-Milwaukee, Advance Cast Stone Co., Fox River Fiber, Weyerhaeuser Co.

Title: Environmental Assessment of Low Temperature Plasma Technologies for Treating VOC's from Pulp Mills and Wood Products Plants
Partners: Univ. of Illinois, Pacific Northwest National Lab, Georgia-Pacific, Current Environmental Solutions, Ecos, Ltd., American International Technologies, ANL

Title: Control of Emissions from Wood Waste Burners and Wood Dryers
Partner: Univ. of Washington

Title: High Selectivity Oxygen Delignification
Partners: IPST, North Carolina State Univ.

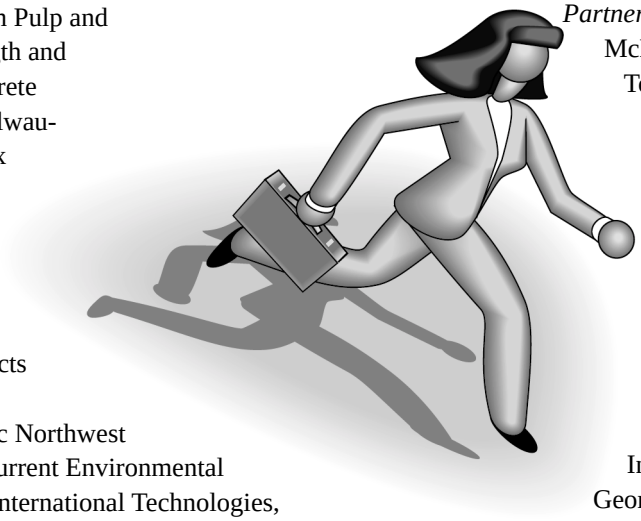
Title: Non-process Element Removal Using Functionalized Monolayers on Mesoporous Supports
Partners: Pacific Northwest National Lab, Weyerhaeuser Co.

Title: Bubble Size Control to Improve Oxygen-Based Bleaching
Partners: IPST, Air Products and Chemicals Inc., Consolidated Papers Inc., Wisconsin Tissue

Title: Increasing Yield and Quality of Low Temperature, Low Alkali Kraft Cooks with Microwave Pretreatment
Partners: Oak Ridge National Lab, Bechtel Technology and Consulting, Beloit Corporation R&D Center, Communications and Power Industries, Consolidated Papers Inc., North Carolina State Univ., Potlatch Research and Development Center, Weyerhaeuser Technology Center

Title: Application of a Device for Uniform Web Drying and Preheating Using Microwave Energy
Partners: IPST, Industrial Microwave Systems

Title: Intermediate-Sized, Entrained Particles: Characterization, Foundation, and Control
Partners: Sandia National Lab, IPST, McDermott Technology Inc., University of Toronto



Title: Selection and Development of Metallic and Refractory Structural Materials for Black Liquor and Biomass Gasification
Partners: Oak Ridge National Lab, IPST, Univ. of Missouri-Rolla, National Renewable Energy Lab, Air Products and Chemicals Inc., Babcock & Wilcox Co., Champion International Corp., Weyerhaeuser Co., Georgia-Pacific Corp., Harbison-Walker Refractories Co., Monofrax Inc.

Title: 3D Characterization of the Structure of Paper and Paper Board
Partners: Univ. of Minnesota, State Univ. of New York, Hercules Inc.

Title: Stability and Regenerability of Catalysts for the Destruction of Tars from Biomass and Black Liquor Gasification
Partners: Georgia Tech Univ., IPST

Title: Acoustic Separation Technology
Partners: IPST, Beloit Corp., Southeast Paper Manufacturing Co., State of Georgia

Title: Development of Screenable Pressure Sensitive Adhesives
Partners: Univ. of Minnesota, IPST, H.B. Fuller Co.

Title: Surfactant Spray: A Novel Technology to Improve Flotation De-inking Performance
Partners: IPST, Voith Sulzer

Title: Preventing Strength Loss of Unbleached Kraft Fiber
Partners: North Carolina State Univ., Hercules Inc., International Paper Co.

Title: Mechatronic Design and Control of a Waste Paper Sorting System for Efficient Recycling
Partners: North Carolina State Univ., SCA Packaging Research, Lions Adhesives

Title: Linear Corrugating
Partner: Mr. Lloyd Chapman **(Inventions and Innovation)**

Title: Guided Acoustic Wave Monitoring of Corrosion and Erosion in Recovery Boiler Tubing
Partners: Lawrence Livermore National Lab, Weyerhaeuser Co.

Title: Laser Sensors for On-Line Monitoring of Carryover in Recovery Boilers
Partners: Sandia National Lab, Weyerhaeuser Co., Georgia-Pacific Corp., McDermott Technology Inc.

Title: Development of a Field Mobile Near Infrared Sensor for Measurement of Chemical Composition and Mechanical Properties of Standing Wood
Partners: National Renewable Energy Lab, Weyerhaeuser Co., Georgia-Pacific Corp., Boise-Cascade, U.S. Forest Service Southern Research Station

Title: Evaluation and Development of a Prototype Electrokinetic Sonic Amplitude System
Partners: Pacific Northwest National Lab, Miami Univ., Colloidal Dynamics, Weyerhaeuser Co., IPST

Title: Model-based Approach to Soft Sensing and Diagnosis for Control of a Continuous Digester
Partners: Univ. of Delaware, Weyerhaeuser Co., Westvaco, IETek

Title: **BestPractices** Plant-wide Energy Efficiency Assessments
Partner: Boise Cascade, Caraustar Industries, Inc.,Georgia Pacific Corp., Inland Paperboard and Packaging Inc.

Title: Energy and Environmental Innovations for Chemically-Preserved Wood Wastes
Partner: Georgia Tech Applied Research Corp. **(Inventions and Innovation)**

Contact: Valri Robinson, 202-586-0937

Agriculture

Title: Thermostable Enzymatic Transformations
Partners: Altus Biologics Inc., Genencor, Oak Ridge National Lab, Cargill

Title: Utilization of Corn-based Polymers
Partners: Cargill Dow Polymers Inc., National Renewable Energy Lab, Colorado School of Mines

Title: Catalytic Upgrading of Glucose
Partners: National Corn Growers Assoc., Pacific Northwest National Lab, Michigan State Univ.

Title: Products from Wheat Milling
Partners: Pendleton Flour Mill Inc., Mennel Milling Co., Pacific Northwest National Lab

Title: Soy-based 2-cycle Engine Oils
Partners: Terresolve Technologies Ltd., United Soybean Board, Smith Bucklin & Associates, Omni Tech International.

Title: Chemicals from Lignocellulose
Partners: Univ. of California-Davis, Argonne National Lab, BC International, NTEC-Versol

Title: Energy Efficient Irrigation
Partner: Northwest Precision Ag Inc. **(I&I)**

Contact: Doug Faulkner, 202-586-2119

Coming Soon! Petroleum to become 9th "Industry of the Future"

The petroleum refining industry will soon join eight other energy-intensive industries when it establishes a formal "Industry of the Future" partnership with DOE. A compact signing ceremony featuring senior executives from the petroleum industry, the American Petroleum Institute, the National Petrochemical and Refiners Assoc. and DOE is planned. OIT's **Petroleum** Team also recently opened its first solicitation (see page 7). (Contact: Gideon Varga, 202-586-0082)

Metalcasting

Title: Ergonomic Improvements for Foundries
Partners: Iowa State Univ., ABC-NACO, McConway and Torlay, American Magotteaux, Buckeye, Southern Cast Products, Sivyer Steel, Southwest Steel, Electric Steel, American Steel Foundries

Title: Investment Shell Cracking
Partners: Tri-State Univ., Spokane Steel, ABC-NACO, Stainless Foundry, Wisconsin Centrifugal, Wisconsin Invest Cast, PED Manufacturing, Nova Precision

Title: Effects of Die Design and Dimensional Features on Thermal Fatigue Cracking of Die Casting Dies
Partners: Case Western Reserve Univ., DCD Technologies, General Die Casters, Procast, Lester, Thyssen, Latrobe Steel Company, FPM Heat Treatment, A. Finkl & Sons, CSM Industries, Brush Wellman, Alloy Tool Steel, Hayes-Tech Center, Chem-Trend, Badger Metal Technology

Title: Development of Fatigue Properties Database for Use with Modern Design Methods
Partners: Climax Research Services, Applied Process Technologies, Intermet, Caterpillar, Hayes Lemmerz International, Lucas Varity, Wheland Foundry

Title: Optimization of Composition and Heat Treating of Die Steels for Extended Lifetime
Partners: Case Western Reserve Univ., Latrobe Steel Company, FPM Heat Treatment, Alloy Tool Steel,Hayes/CMI Tech, DCD Technology, Chem-Trend, Badger Metal Technology

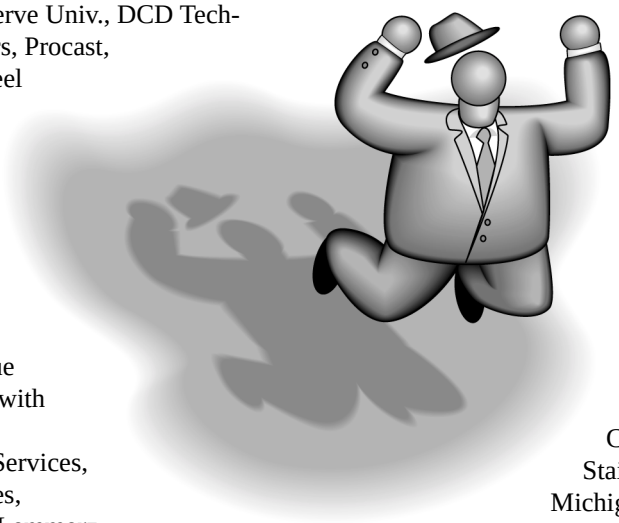
Title: Understanding the Relationship Between Filling Pattern and Part Quality in Die Casting
Partners: Ohio State Univ., General Die Casters, Walkington Engineering, GM Bedford, Lester Precision Die Casting

Title: Clean Cast Steel Technology
Partner: Univ. of Alabama, American Steel Foundries, Atchison Casting Corp., Dominion Castings Ltd., Falk Corporation, Flow Technology, Harrison Steel Castings Company, National Castings, Inc., Pelton Casteel, Inc., The Sawbrook Steel Castings Co., Sivyer Steel Corporation, Southern Cast Products, Viking Engineering Cast Products

Title: Energy Consumption of Die Casting Operations
Partners: Ohio State Univ., Premier Tool & Die Cast Corporation, GM Powertrain

Title: The Effects of Externally Solidified Product on Wave Celerity and Quality of Die Cast Products
Partners: Ohio State Univ., Briggs & Stratton Corp., Heick Die Casting Corp., Walkington Engineering

Title: Computer Modeling of Shot Sleeves
Partners: Ohio State Univ.,Walkington Engineering, Briggs & Stratton, GM Bedford, Visi-Trak Corp



Title: Highly Efficient Rapid Tooling Using Optimized Cooling Passages
Partner: Edison Materials Technology Center (EMTEC) **(Inventions and Innovation)**

Title: Heat Treatment Procedure Qualification for Steel Castings
Partners: Pennsylvania State Univ., American Steel Foundries, Frogswitch, The Harrison Steel Castings, Milwaukee Steel, Missouri Steel Castings, Pacific Steel Castings Company, Sawbrook Steel Castings, Stainless Foundry & Engineering, Varicast, West Michigan Steel Foundry

Title: Clean, Machinable, Thin-walled, Gray and Ductile Iron Casting Production III
Partners: Univ. of Alabama, Cummins Engine, ABI, Consolidated Diesel, Bosch Breaking Systems, Caterpillar Inc., Copeland Corporation, Daimler Chrysler, Wells Manufacturing, Ford Motor Co., Hiler Industries, Ingersoll Cutting Tools, Kohler, Mercury Marine, Seele Corp, Technalysis, Waupaca Foundry Co., Wheland Foundry Co.

Title: Advanced Lost Foam Casting Technology, Phase V
Partners: Univ. of Alabama, Advanced Cast Products, Ashland Chemical Co., Austin Associates, BMW AG, Burden, Inc., Briggs & Stratton, Carbo Ceramics, Caterpillar, Citation Foam, Copeland Corp., GM Powertrain, GM Saturn, General Kinematics Corp., Intermet Corp., Koehler, MACO Corp., Mercury Marine, Montupet UK, Mueller Co., Nemak, S.A., Niles Chemical, Outboard Marine, Southeastern Foundry, Stanton PLC, Styrochem International, UES ProCast Group, Volkswagen AG, Vulcan Engineering Co.,Willard Industries

Title: Sensors for Die Casting
Partners: Hayes Lemmerz Inc., Oak Ridge Natl. Lab, Briggs & Stratton, Chem-Trend, Littler Diecast Corp., Kennedy Die-Casting, Inc., The Newten B New Haven Co., Prince Machine Corp.

Title: The Development of Surface Engineered Coatings for Die Casting Dies
Partners: Colorado School of Mines, SPX Contech, Blue Ridge Pressure Castings, Hard Chrome, ISM, Hayes Lemmerz

Title: Age Strengthening of Gray Cast Iron, Phase III
Partners: Tri-State Univ., LECO, Dalton Kendallville, Dalton Warsaw, Auburn Foundry, Bremen Castings, ACM Coldwater, Dock Foundry

Title: Creep Resistant Zinc Alloy Development
Partners: International. Lead-Zinc Research Organization, Inc., Die Makers, Eastern Alloys

Title: **BestPractices** Plant-wide Energy Efficiency Assessment
Partner: AMCAST Industrial Corp.

Title: Increasing Productivity and Reducing Emissions Through the Enhanced Application Control of Die Casting Die Lubricants
Partners: North American Die Casting Association, Illinois Department of Commerce and Community Affairs **(NICE^3)**

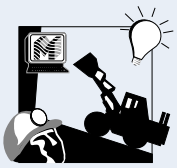
Title: Cryogenic Separation of Foundry Sands and Reuse of Reclaimed Streams.
Partners: Air Products and Chemicals Inc., Ohio Department of Development's Office of Energy Efficiency **(NICE^3)**

Contact: Harvey Wong, 202-586-9235

OIT receives Special Recognition Award from Diecasting Industry

The North American Die Casting Association presented a Special Recognition Award to OIT and DOE. The award said that, "By considering the many points of view of this diverse industry, (OIT's) Industry of the Future approach is improving the exchange of information and helping to identify and overcome major barriers. Coordinated planning also helps eliminate duplication and gaps in R&D activities. As a result, cycle time from technological concept to application in the foundry is being reduced—in some cases to as little as 18 months."

Mining



Title: Selective Flocculation of Fine Mineral Particles
Partners: Albany Research Center, JR Simplot, Peabody Group, Florida Institute of Phosphate Research, Univ. of Kentucky, Pennsylvania State Univ., Univ. of Idaho

Title: Robotics Technology for Improving Mining Productivity
Partners: Idaho National Engineering and Environmental Lab, Carnegie Mellon Univ., Joy Mining Machines, CONSOL Inc.

Title: Development of a Mine Compatible LIBS Instrument for Ore Grading
Partners: Idaho National Engineering and Environmental Lab, Advanced Power Technology Inc., JR Simplot, Baker Hughes Process, Univ. of Idaho

Title: Development of a 3-Dimensional Version of the Millsoft Simulation Software
Partners: Idaho National Engineering and Environmental Lab, Univ. of Utah, Process Engineering Resources Inc., Barrick Goldstrike Mines, Kennecott Utah Copper

Title: Drilling and Blasting Optimization Using Seismic Analysis and X-Ray Fluorescence Spectroscopy
Partners: Lawrence Berkeley National Lab, Univ. of Arizona, Phelps Dodge Mining Inc., Thunderbird Pacific Corp.

Title: The Application of High Temperature Superconductors to Underground Communications
Partners: Los Alamos National Lab, Hecla Co., CONSOL Inc., Cyprus, Asarco, Phelps Dodge Mining Inc., Raton Technology Research, WIPP, Harris Communications, Colorado School of Mines

Title: Mineral Byproduct Recovery
Partners: Oak Ridge National Lab, SepraDyne Corp., Colorado School of Mines, Univ. of Arizona

Title: Development and Deployment of On-Board Lubrication Oil and Hydraulic Fluid Analysis Systems
Partners: Caterpillar Inc., Additional mining partners to be named later

Title: Crosswell System for Imaging Ahead of Mining
Partners: Sandia National Lab, West Virginia Univ., Stolar Horizon Inc., CONSOL Inc., Kennecott Utah Copper

Title: Safe and Low Cost Hydrogen Storage for Fuel Cell Mining Vehicles
Partners: Savannah River Technology Center, Fuelcell Propulsion Institute, Hydro Quebec, Univ. of South Carolina

Note: Additional mining projects to be announced soon, and will be posted on *OIT Times-on-the-web.*

Contact: Toni Grobstein Marechaux, 202-586-8501

Inventions & Innovation

Title: Industrial Fuel Cell Micro-Generator
Partner: Fuel Cell Technologies Inc.
Title: Membrane Technology to Remove Entrapped Air from Ammonia Refrigeration Systems
Partner: Enerfex Inc.

Title: A DSP-Based Power Electronics Interface for Alternate/Renewable Energy Systems
Partner: University of Houston

Title: Multielement Selective Emitter: A New High Efficiency Incandescent Light Source
Partner: Sonsight Projects Inc.

Title: Novel 4-Way Refrigerant Reversing Valve for Heat Pumps
Partner: University of Arkansas

Title: Innovative Energy-Efficient Dryer
Partner: Research Triangle Institute

Title: High Temperature Refractory Ceramic
Partner: Trilliam Thermo Technologies Inc.

Title: Electrocaloric Materials for Room Temperature Refrigeration
Partner: CeramPhysics, Inc.

Title: High Efficiency, High Capacity Cooling and Refrigeration
Partner: Environmental Technology and Education Center

Title: Increasing Efficiency in Permanent Magnet DC Motors through Magnetic Pseudo Liquid-Filled Air Gaps
Partner: Bodine Electric Company

Title: Development of a Composite Reinforced Aluminum Conductor
Partner: W. Brandt Goldsworthy & Associates Inc.

Title: In-Situ, Real Time Measurement of Melt Constituents in the Aluminum, Glass, and Steel Industries
Partner: Energy Research Company

Title: High Speed, Permanent Magnet Motor Testing for the AC Market
Partner: SatCon Technology Corporation

Title: Rotary Burner
Partner: Calcpos Engineering

Title: Fault Warning Device Using Fiber-Optic Partial Discharge Sensor for Prevention of Destructive Arc Faults in Metal-Clad Electrical Switchgear and Bus
Partner: Forsyth Electro-Optics Inc.

Title: Miniature, Inexpensive, Amperometric Oxygen Sensor
Partner: CeramPhysics, Inc.

Note: Additional I&I projects are listed with the relevant Industries of the Future.

Contact: Sandy Glatt, 202-586-3897

The OIT Times-on-the-web expanded on a trial basis

Unfortunately, listing all our new projects in the current issue of The OIT Times precluded us from providing our readers with other continuing news about our many Industry of the Future teams and program areas. So, on a trial basis, we've expanded the HTML version of *The OIT Times-on-the-web* to include the regular news features that our readers are accustomed to. You can view, download or print the Winter issue of *The OIT Times-on-the-web* at www.oit.doe.gov/oittimes.

OIT's NICE³, Inventions programs accepting pre-proposals for 2000 solicitations

The **NICE³** and **Inventions and Innovation** (I&I) programs are now accepting two-page pre-proposals for their FY2000 solicitations through March 17, 2000. Although pre-proposals are optional, potential applicants are highly encouraged to submit a desciption of their project in the format designated by each program.

The NICE³ program funds up to $525,000 (50% cost sharing required) for the first commercial demonstration of industrial technologies that reduce energy consumption, waste production and operating costs. I&I provides financial assistance at two levels: up to $40,000 or up to $200,000 depending on the stage of development for establishing technical performance and conducting early development of inventions that have a significant energy savings impact and commercial market potential. In addition to financial assistance, I&I offers technical guidance and commercialization support to successful applicants.

In December, **Inventions and Innovation** and **NICE³** are expected to concurrently announce additional new projects that will be listed in the Winter, 2000 issue of *The OIT Times-on-the-web* soon after they are selected.

For more information on pre-proposal requirements, visit www.oit.doe.gov/nice3 and www.oit.doe.gov/inventions.

OIT's 3rd Customer Day to help keep us "customer-focused"

OIT's 3rd biennial "Customer Day" is planned for February 16 in Washington, DC. About 200 of our customers will hear about current OIT initiatives and provide their valuable feedback in what promises to be a very interesting program. At a Customer Day awards ceremony OIT plans to recognize its first annual "Technology of the Year" and "Partner of the Year." A reception the evening before Customer Day is also planned. This is a key event on our calendar and helps insure OIT remains a strongly customer-focused organization. Look for the Spring issue of The OIT Times for all the news about "Customer Day."

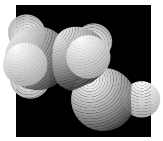
Current OIT Solicitation Schedule*

Industry/Program	RFP	Proposals Due	Selections	Funding (approx)	URL (www.):
Agriculture	12/99	2/00	4/00	$3 mil	TBD
Aluminum (‘00/‘01)	Past	Past	1/00	$6 mil	oit.doe.gov/aluminum/alsolict.html
Chemicals	3/00	6/00	9/00	$4 mil	oit.doe.gov/chemical
Forest Products	Past	Past	4/00	$3 mil	oit.doe.gov/forest
Forest Products - Biomass & Black Liquor Gasification	Now Open	1/00	3/00	$9 mil	oit.doe.gov/forest
Glass	1/00	3/00	6/00	$3 mil	TBD
Metalcasting	11/99	2/00	7/00	$1-2 mil	TBD
Mining - Industry	Past	Past	12/99	$1-3 mil	fetc.doe.gov/business/solicit.html
Petroleum (‘00)	Now Open	3/00	4/00	$900K	TBD
Steel - American Iron and Steel Institute	3/00	5/00	8/00	$1-2 mil	steel.org/mt
Steel - Industry	Now Open	12/99	1/00	$5-6 mil	id.doe.gov/doeid/psd/solicit.html
Inventions & Innovation (‘00)	Past	Past	12/99	$2.3 mil	——
Inventions & Innovation (now accepting two page-pre-proposals)	5/00	7/00	12/00	$2.3 mil	oit.doe.gov/inventions
NICE^3 (‘00)	Past	Past	12/99	$4 mil	——
NICE^3 (now accepting two page-pre-proposals)	5/00	7/00	12/00	$4 mil	oit.doe.gov/nice3/grants/grants.html
Industrial Power - Low Emissions	Now Open	1/00	3/00	$2 mil	ch.doe.gov/business/acq.htm
Industrial Power - Advanced Materials for Turbines	12/18/99	2/00	4/00	$3 mil	ch.doe.gov/business/acq.htm
Industrial Power - Reciprocating Engine	12/30/99	2/00	5/00	$2 mil	ch.doe.gov/business/acq.htm
Industrial Power - Microturbine Engine	12/30/99	2/00	4/00	$3 mil	ch.doe.gov/business/acq.htm
Industrial Distributed Generation	TBD	TBD	TBD	$2 mil	TBD
States IOF (tentative)	Now Open	2/00	4/00	$2.8 mil	oit.doe.gov/states/#solicitation
Plant-Wide Energy Efficiency Assessments (‘00)	Now Open	1/00	2/00	$500K-700k	E-mail: zmo@ornl.gov

** As of 12/15/99. FY01 funds, unless indicated. Information in this table is periodically updated. For latest data, visit: www.oit.doe.gov/new/solicitations.shtml*

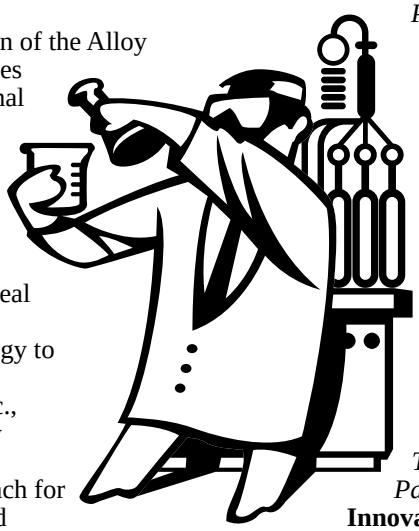
New Projects

Chemicals



Title: Prediction of Corrosion of Alloys in Mixed Solvent Environments
Partners: OLI Systems, Inc., Dow Chemical Co., DuPont Chemical Co., Westvaco: Membrane Technology Institute, Oak Ridge National Lab

Title: Enhancement and Commercialization of the Alloy Selection System for Elevated Temperatures
Partners: Shell Oil Co., Oak Ridge National Lab, Humberside Solutions, Ltd., Materials Technology Institute, Texaco, Shell, Foster Wheeler Development Corp., Caterpillar, Inco Alloys International, Haynes International, KEMA (Netherlands), The Royal Military College of Canada, Ecole de Polytechnique de Montreal



Title: Development of New PSA Technology to Recover Products for Waste Streams
Partners: Air Products and Chemicals, Inc., Phillips Petroleum Co., Univ. of Kentucky

Title: Development of Integrated Workbench for Gas-phase Thermodynamics, Kinetics, and Reaction Modeling
Partners: Colorado School of Mines, National Renewable Energy Lab, Exxon Research & Engineering Co., MC Research and Innovation Center, Lorentzian, Inc., Reaction Design, Inc., Univ. of Delaware, Wesleyan Univ., National Institute of Standards and Technology, Gaussian, Inc.

Title: Advanced Catalytic Hydrogenation Retrofit Reactor
Partners: Air Products and Chemicals, Inc., Johnson Matthey

Title: Corrosion Monitoring System
Partners: Honeywell, Eastman Chemical Co., Oak Ridge National Lab, Materials Technology Institute

Title: Advanced Intermetallic and Alloy for Ethylene Reactors
Partners: Exxon Chemical Co., Equistar Chemicals—LP, Shell Chemical Co., BP Amoco, Air Products and Chemicals, Inc., Akzo Nobel Chemicals, Inc., Sandvik Steel Co., Inco Alloys, Inc., Nooter Fabricators, Inc., Duraloy Technologies, Inc., Oak Ridge National Lab

Title: Study of Metal Dusting Phenomenon and Development of Materials Resistant to Metal Dusting
Partners: Argonne National Lab, Air Products and Chemicals, Inc., DuPont Chemical Co., Exxon Chemical Co., AlliedSignal, Haynes International, Avesta Sheffield, Sandvik Steel Co., Duraloy Technologies, Inc., Special Metals

Title: Separation of Aromatic Isomers
Partner: Gallatin Research **(Inventions and Innovation)**

Title: Plastic Manufactured from Recovered Post-Consumer Durable Goods
Partners: MBA Polymers Inc., California Energy Commission **(NICE^3)**

Title: Low-Frequency Sonic Mixing Technology
Partner: Montec Associates, Inc. **(Inventions and Innovation)**

Contact: Hank Kenchington, 202-586-1878

Sensors & Controls

Title: Tunable Diode Lasers Sensors for Monitoring and Control of Harsh Combustion Environments
Partners: American Air Liquide, Inc., Physical Sciences, Inc.

Title: Solid-State Chemical Sensors for Monitoring Hydrogen in IOF Process Streams
Partners: Pennsylvania State University, Air Products and Chemicals, Sandia National Laboratory, DCH Technologies

Title: Diagnostics and Control of Natural Gas Fired Furnaces via Flame Image Analysis Using Machine Vision and Artificial Intelligence Techniques
Partner: University of Missouri-Rolla

Title: Remote Automatic Material On-line Sensor
Partner: Quantum Magnetics, Inc.

Title: New Optical Coupling of Infrared Analyzers to Industrial Processes*
Partner: Advanced Fuel Research, Inc.

Title: Fiber Optic Sensor for Industrial Process Measurement and Control*
Partner: Metrolaser, Inc.

Title: Real-Time Gas Composition Analyzers for On-Line Process Control*
Partner: Nanomaterials Research Corporation

Title: High-Temperature Micromachined Sensor for Industrial Gas Streams*
Partner: Nanomaterials Research Corporation

** = S&C Small Business Technology Transfer Award*

Contact: Eric Lightner, 202-586-8130

Industries of the Future--States

Title: Northeast Regional Industries of the Future
Partners: New York State Energy Research and Development Authority, New Hampshire Governor's Office of Energy and Community Services, Connecticut Office of Policy Management, University of Massachusetts, Rhode Island State Energy Office, Vermont Department of Public Service, Alfred University, Hofstra University, State University of New York, Maine Department of Economic Development, University of Maine, Massachusetts Division of Energy

Title: Vision 2020 for the Alabama Chemical Industry: Development of a Research/ Implementation Agenda for Alternative Reaction Media
Partners: University of Alabama Huntsville, Industrial Energy Advisory Service, Alabama Power, Alabama Center for Green Manufacturing

Title: Building Capability for Industry Partnerships
Partners: Arkansas Energy Office, Arkansas Department of Economic Development

Title: Municipal Case Studies for Distributed Energy Resources
Partners: California Energy Commission, California Alliance for Distributed Energy Resources (CADER), City of Irvine, Association of Bay Area Governments

Title: Development of an Industries of the Future Action Plan and Information Dissemination for the Colorado Forest Products Industry
Partners: Colorado Office of Energy Conservation, McNeil Technologies, Inc., Colorado State Forest Service, Colorado Timber Industry

Title: Illinois Industrial Energy Technical Assessment
Partners: King Technology, Illinois Department of Commerce and Community Affairs, Capital Surini Group International, Inc.

Title: Kentucky Aluminum Technology Roadmap
Partners: Kentucky Division of Energy, Southeast Center for Aluminum Technology

Title: Action Plans for Maine's Forest Products Industry
Partners: Maine Department of Economic and Community Development, Maine Manufacturing Extension Partnership, Maine Chamber and Business Alliance, University of Maine, Maine State Planning Office, Central Maine Power Company

Title: Montana's Implementation of the Forest and Wood Products Industry Technology Roadmap
Partners: TechLink, Montana Department of Environmental Quality, Montana State University

Title: Ohio's Industries of the Future Showcase Demonstration Project
Partners: Ohio Department of Development, Ohio Office of Energy Efficiency, American Municipal Power - Ohio

Title: Oregon Industries of the Future
Partners: Oregon Office of Energy Efficiency, Oregon State University Industrial Assessment Center

Title: Implementation of the Industries of the Future in the State of Pennsylvania
Partners: Concurrent Technology Corporation, Pennsylvania Department of Environmental Protection

Title: Industrial Technologies Benefiting Industries of the Future
Partners: South Carolina Manufacturing Extension Partnership, South Carolina Energy Office

Title: State of Utah Industries of the Future Initiative
Partners: ETC. Group, Inc., Utah State Office of Energy Services, Utah Technology Finance Corporation, Utah Manufacturing Extension, Utah Engineering Experiment Station

Title: The Virginia Mining Industry: Making the Technological Transition to the 21st Century
Partners: Virginia Department of Mines, Minerals, and Energy, Virginia Polytechnic Institute and State University, Virginia Center for Coal and Energy Research, Powell River Project, Virginia Aggregates Association, Virginia Coal Association, Weir International Mining Consultants

Title: Guidebook for the Development of CHP at IOF Industrial Sites
Partners: Washington State University Cooperative Extension Energy Program, Washington Department of Community, Trade & Economic Development Energy Division, International District Energy Association

Title: Industries of the Future - West Virginia
Partners: West Virginia University, West Virginia Development Office

Title: Wisconsin Metal Casting Industries of the Future
Partners: Wisconsin Energy Bureau, Energy Center of Wisconsin, University of Wisconsin - Milwaukee

Title: Combined Heat and Power Proposal for the State of Indiana
Partners: Caterpillar Gas Engines, Indiana Department of Commerce - Energy Division

Title: Louisiana Industries of the Future
Partners: Louisiana State University, Louisiana Department of Natural Resources

Title: Industrial Technologies
Partners: Mississippi Department of Economic and Community Development - Energy Division

Contact: Sandy Glatt, 202-586-3897

DOE Secretary Richardson helps launch high-efficiency cogeneration system at Massachusetts textile mill

A festive mood prevailed as Secretary of Energy Bill Richardson visited Malden Mills on November 8 to dedicate the plant's new, advanced cogeneration system. The Secretary was joined by Malden Mills CEO Aaron Feuerstein, Congressman Marty Meehan (D-MA), and Max Kennedy (representing his uncle, Senator Ted Kennedy) in dedicating the system that is saving energy, cutting costs, and sharply reducing emissions at the Lawrence, MA, textile mill. The state-of-the art system, featuring continuous-fiber ceramic composite **(CFCC)** components, was developed by Solar Turbines in partnership with OIT's **Industrial Power Generation** and **CFCC** programs.

Calling the event "a wonderful celebration of what is good in this country," Secretary Richardson praised the cooperative efforts by national, state, and local officials to make the technology demonstration project a reality. The cogeneration system saves energy by simultaneously generating electricity and thermal energy for the mill, achieving an overall efficiency of 73%–more than twice the efficiency of the average U.S. power plant. The highly efficient and clean-burning system uses two innovative Solar Centaur 50 gas turbine engines with CFCC liners to cut carbon emissions by 41%, reduce NOx by 58%, and virtually eliminate SO_2 emissions. At full production, the project will save Malden Mills $1 million annually.

The advanced cogeneration system is symbolic of the company's rebirth after a devastating fire in 1995. At that time, the mill's charismatic, 70-year-old CEO made national news by pledging to keep all employees on the payroll while rebuilding the mill–which is a mainstay of the local economy. The rebuilding process, completed earlier this year, preserved the company's old clock tower and skilled work force, while introducing more modern design and technology to enhance environmental performance and promote sustained success. Since the fire, company sales have increased 40%.

The Secretary presented Feuerstein with a Certificate of Partnership to recognize his outstanding leadership and commitment to excellence. William Demmons, director of engineering at Malden, was awarded a similar certificate to acknowledge the instrumental role he played in the project.

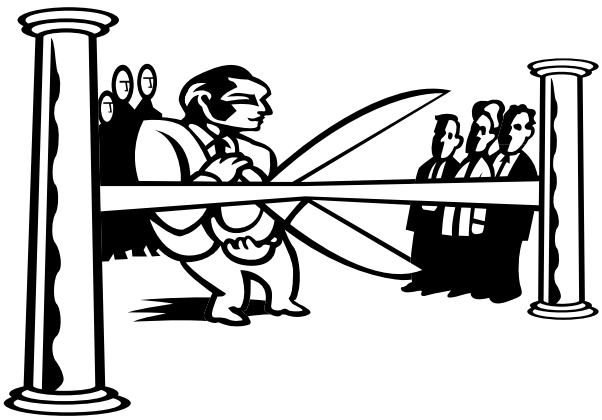
After a brief tour of the new system, Demmons was asked about the risk involved in committing his company to a cutting-edge technology. He replied that the in-house engineering staff had worked closely with DOE and Solar Turbines in examining system capabilities, and felt totally confident in the technology's ability to deliver–a confidence borne out by the system's performance to date. The permitting process presented by far the biggest hurdle to the project. The removal of such hurdles is a key objective of OIT's new **Combined Heat and Power** Initiative.

Combustion

Title: Packed Media/Transport Membrane Boiler Development and Demonstration
Partners: Gas Research Institute, Institute of Gas Technology, Donlee Technologies

Title: High-Efficiency, Low Emission Integrated Process Heater System
Partners: Arthur D. Little, Inc., Exxon Research and Engineering Co., Callidus Technologies, Inc.

Contact: Gideon Varga, 202-586-0082



Aluminum

Title: Development of a Novel Non-Consumable Anode for Electrowinning Primary Aluminum
Partners: Ohio State Univ. Research Foundation, Kaiser Aluminum Co., Siemens-Westinghouse, Gas Research Institute

Title: Integrated Numerical Methods and Design Provisions for Aluminum Structures
Partners: Cornell Univ., The Aluminum Assoc.

Title: Intelligent Potroom Operation
Partners: Applied Industrial Solutions LLC, West Virginia Univ., Century Aluminum, Gensym Corp.

Title: Spray Rolling Aluminum Strip
Partners: Univ. of California, Colorado School of Mines, Idaho National Energy Engineering Lab, Aluminum companies pending

Title: **BestPractices** Plant-wide Energy Efficiency Assessment
Partner: Alcoa

Title: Brazing and Spot Welding Innovations for Joining Aluminum Alloys in Vehicle Manufacturing
Partner: Innovative Technology Inc. **(Inventions and Innovation)**

Title: Demonstration of a High Temperature, Corrosive Resistant Recuperator for the Metals Industry
Partners: Alcoa, Indiana Department of Commerce, Energy Policy Division **(NICE^3)**

Contact: Sara Dillich, 202-586-7925

NICE^3

Title: A Device for Efficiently and Uniformly Drying Nonwoven Materials Using Microwave Technology
Partners: Industrial Microwave Systems Inc., North Carolina Department of Environment and Natural Resource

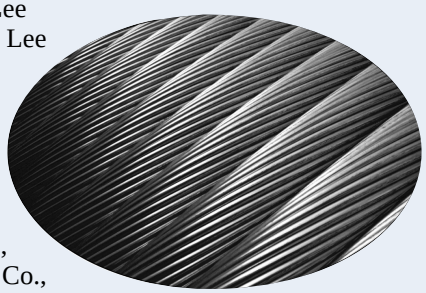
Note: Additional NICE3 projects are listed with the relevant Industries of the Future.

Contact: Lisa Barnett, 202-586-2212

Steel

Title: Controlled Thermo-Mechanical Processing of Tubes and Pipes for Enhanced Manufacturing and Performance
Partners: The Timken Co., DaimlerChrysler Corp., Ford Motor Co., Friedrich Kocks Gmbh & Co., Idaho Nat=l Energy Engineering Lab, National Research Council Canada, Oak Ridge National Lab, Univ. of British Columbia, U.S. Steel Group

Title: Research Related to the Development of the Automated Steel Cleanliness Tool
Partners: R.J. Lee Group Inc., R.J. Lee Instruments, Ltd., R.J. Fruehan Consulting, Oak Ridge National Lab, U.S. Steel, CSC, Ltd., LTV Steel Co., MacSteel, Inc.



Title: Development and Demonstration of Novel Low-NO Burners for Boilers in the Steel Industry
Partners: Institute of Gas Technology, Covol Technologies, Detroit Stoker Co.,Univ. of Utah

Title: **BestPractices** Plant-wide Energy Efficiency Assessment
Partner: Crucible Specialty Metals

Title: Clean Production of Coke from Waste Carbonaceous Fines
Partner: Combustion Resources **(Inventions and Innovation)**

Title: Hot Mill Transfer Bar Rapidfire Edge Heat Project
Partners: Weirton Steel Corporation, West Virginia Energy Efficiency Program **(NICE^3)**

Title: Method of Making Steel Strapping & Strip
Partner: Robert Reilly & Associates **(Inventions and Innovation)**

Title: Portable Parallel Beam X-Ray Diffraction System for In-Line Process Control in the Steel Industry
Partner: X-Ray Optical Systems, Inc. **(Sensors & Controls)**

Note: Additional steel projects to be announced soon, and will be posted on *OIT Times-on-the-web.*

Contact: Scott Richlen, 202-586-7925

Calendar

Engineering Ceramics & Structures Conference, Port Canaveral, FL, Jan 23-28, 2000

Pump Systems/PSAT Workshop, Novi, MI, Jan 27, 2000, contact Anna Maksimova at 360-754-1096, ext. 100

Pump Systems/PSAT Workshop, Vancouver, WA, Jan 27, 2000, contact Anna Maksimova at 360-754-1096, ext. 100

Paper Week International 2000, Montreal Quebec, CAN, Jan 31-Feb 4, 2000

Combined Heat and Power: Energy Solutions for the 21st Century, Washington, DC, Feb 1-2, 2000

Society for Mining, Metallurgy, and Exploration (SME) Annual Meeting and Exhibition, Salt Lake City, NV, Feb 28-Mar 1, 2000

"Commodity Classic" Trade Show and Exposition, Mar 5-7, Orlando, FL

TAPPI Recycling Symposium, Arlington, VA, Mar 5-8, 2000

PittCon 2000 Symposium, Session on Sensors and Industrial Process Controls, New Orleans, LA, Mar 12-17, 2000

Minerals, Metals & Materials Society (TMS) 129th Annual Meeting and Exhibition, Nashville, TN, Mar 13-16, 2000

Steam BestPractices Steering Committee Meeting, Orlando, FL, Jan, 2000

NACE Corrosion 2000, Mar 26-31, 2000, Orlando, FL,

A Celebration of Steel: The Pittsburgh Regional Steel Showcase, Pittsburgh, PA, May 4-5, 2000

IGTI, ASME Turbo Expo, Munich, GER, May 8-11, 2000

IPLocator 3.0 scheduled for release

Identifying R&D opportunities within the Federal government can be a daunting task. OIT's Industrial Projects Locator (IPLocator) addresses that challenge and helps leverage Federal and private R&D resources by providing industry customers with an accessible, centralized source of R&D and contact information. The IPLocator is a user-friendly database of over 10,000 industrial-related R&D projects that are supported by the Federal government.

The IPLocator is both comprehensive and easy to use. Users can search for opportunities by key word, agency, funding amount, industry, or project start date. Search results provide the project title, performing organization and other participants, sponsoring agency, points of contact, a project abstract, funding amounts and vehicles, beginning and ending dates, and other relevant data.

With the continued cooperation of other Federal agencies, OIT periodically updates the IPLocator to include the most current ongoing and recently completed R&D projects. The latest version of the IPLocator, Version 3.0, is scheduled for CD-ROM distribution in February, 2000. Improvements to Version 3 will allow faster searching and sorting.

The IPLocator is available at no charge on CD-ROM; over 2,000 CDs have been distributed to date. Toll-free telephone and email support are also available for user questions and comments. Users can also access the most up-to-date data in the on-line version of the IPLocator at http://www.oit.doe.gov/iplocator.shtml. (Contact: Jim Quinn, 202-586-5725)

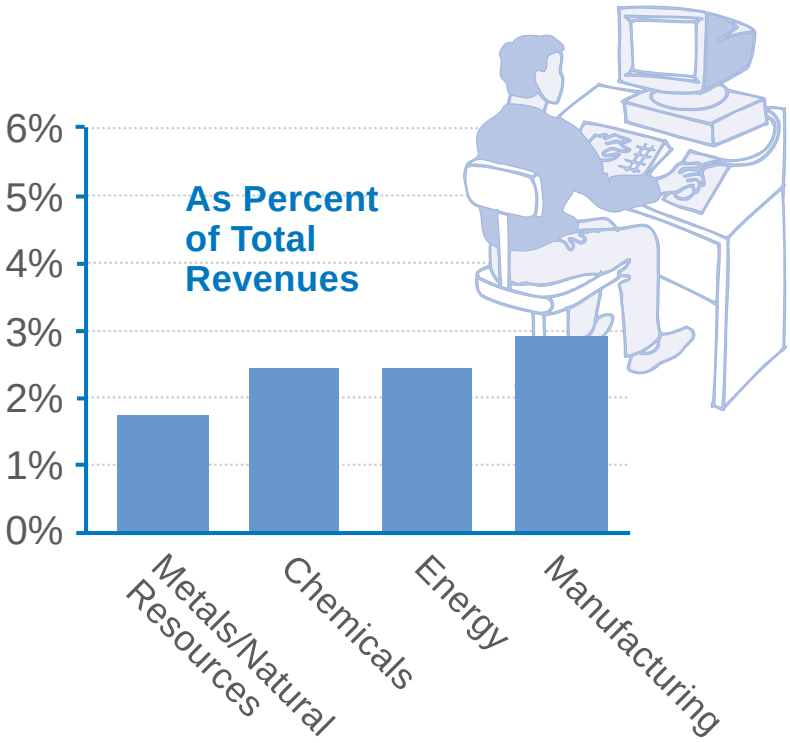
New Publications

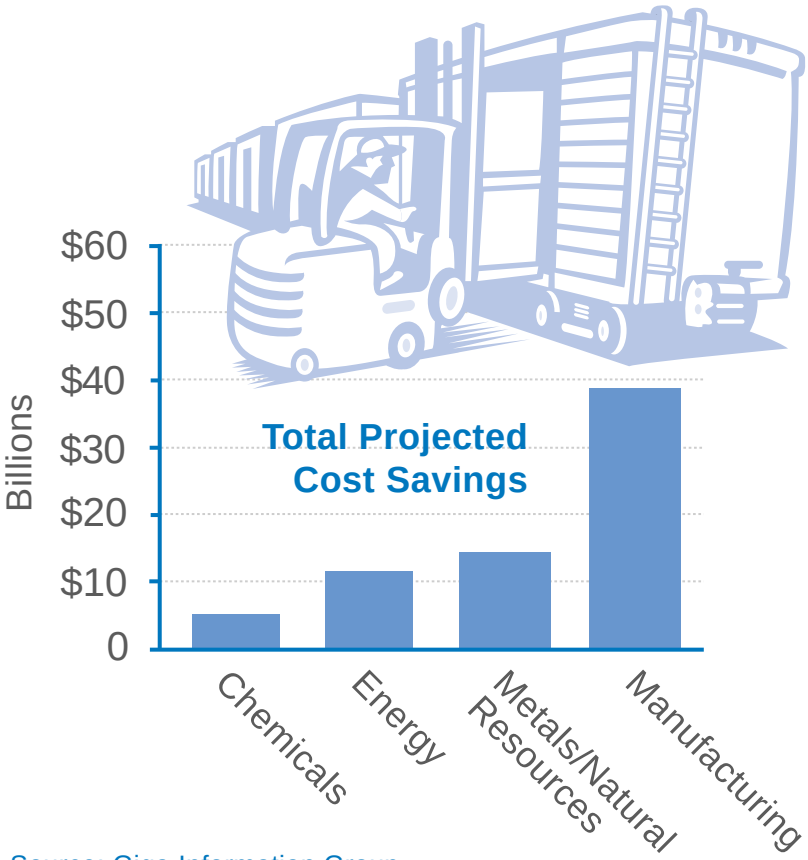
Title
OIT Information Resources Catalog, 2000
1999 State Fact Book
Continous Fiber Ceramic Composite Program Plan Update—Accomplishments and Program Completion Roadmaps
Combined Heat and Power: A Vision for the Future
Combined Heat and Power in the State of California
Conservation in Combustion, also available on-line at www.oit.doe.gov/combustion
IPLocator Version 3.0
Inventions to Innovation (revised)

To request copies, call 1-800-862-2086.

Industry Trends

Projected Cost Savings from E-Commerce on the Internet, 2002





Source: Giga Information Group and *Manufacturing News*

Editorial

Now open! "One-stop shop" for questions about OIT products, services

By Lou Sousa
Managing Editor, *The OIT Times*

- An R&D manager in the forest products industry wanted to know about potential Government cost-sharing opportunities.
- A refinery facility manager needed help justifying a preventative maintenance program for his steam system.
- An aluminum industry supplier heard about the industry's vision and roadmaps and wanted to know how to get copies.
- A foundry with 8000 hp of air compressors had a moisture carry-over problem.
- A glass firm was looking for funding to help demonstrate an innovative melting technology.
- A chemical manufacturer heard that OIT helps plants assess their energy consumption and opportunities for improved performance.

What do these people have in common? They all called OIT's ***new Information Clearinghouse*** for help!

These questions—and many more—make up a typical day for the engineers and staff at our new Clearinghouse. They are getting hundreds of calls monthly from all over the country with pressing questions about how to make industrial plants more competitive and energy efficient, businesses more profitable, processes more reliable.

You, too, are invited to call them about ***any*** of the products and services that OIT offers—including technical assistance for your motor, steam, compressed air and combined heat and power systems. Stay tuned to future issues of *The OIT Times* and our web site for more details about our new Clearinghouse.

As OIT partners with U.S. industry to develop and deliver technologies and best practices that improve efficiency and profits and reduce waste, our Clearinghouse can be *your* first stop on the way to solutions. They're open 9 am to 8 pm EST. Call them at 1-800-862-2086!

Diecaster teams with OIT in hosting technology showcase

On November 4, 1999, OIT, the North American Die Casters Association (NADCA), and Lester Precision Die Casting hosted a technology showcase to demonstrate energy efficiency and productivity advancements in Lester's Twinsburg, OH, facility. Over 300 guests from the die casting industry, academia, and government attended the event, which featured facility tours, as well as "Tech Talks" by some of the nation's leading die casting researchers.

The showcase highlighted technologies developed through OIT's **Metalcasting Industry of the Future** (IOF) program. IOF program participants, including DOE, NADCA and hundreds of partners from the metalcasting industry and academia, perform cost-shared R&D to address both DOE's national energy efficiency goals and industry goals outlined in the *Metal Casting Industry Technology Roadmap*. This research has resulted in numerous technology advances that have been implemented at plants like Lester's Twinsburg facility.

The facility tour featured technologies like visualization tools and advanced computer modeling programs. Lester also demonstrated how OIT-supported R&D is enhancing the quality of die-cast products. For example, high magnesium-content castings enable lighter weight automotive castings that can meet stringent load and strength requirements. A "crosscutting" technology highlighted on the tour was an innovative membrane system designed to treat Lester's wastewater that was developed in partnership with DOE's Idaho National Engineering Lab.

The tour also focused on Lester's use of OIT **BestPractices** resources—products and services that help industry become more energy efficient today. For example, Lester highlighted energy-saving technologies and processes implemented as a result of an OIT-sponsored energy audit, one of OIT's many BestPractice resources.

THE OIT TIMES
"Turning Industry Visions into Reality"

Office of Industrial Technologies, EE-20
Energy Efficiency and Renewable Energy
U.S. Department of Energy
Washington, DC 20585
www.oit.doe.gov

ISSN 1526-2804

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